SECTION 07513

MODIFIED BITUMEN CAP SHEET BUILT-UP ROOFING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish and install a weather and watertight modified bitumen cap sheet built-up roof system complete, in place, as shown on the drawings and as specified herein.

1.02 RELATED SECTIONS

A. Section 01110 – Summary of Work

B. Section 02050 – Roof Demolition and Disposal.

C. Section 02235 – Temporary Site and Pedestrian Protection.

D. Section 05315 - Steel Deck Replacement.

D. Section 06100 - Rough Carpentry.

E. Section 07220 - Roof Insulation.

F. Section 07620 - Roof Related Sheet Metal.

G. Section 07720 - Roof Specialties and Accessories.

H. Section 07920 - Sealants and Caulking.

I. Section 09830 – Elastomeric Wall Coating.

J. Section 09870 – Urethane Paint.

1.03 REFERENCES

A. ASTM D-41, Specification for Asphalt Primer, most recent edition.

B. ASTM D-173, Specification for Bitumen Saturated Cotton Fabrics, most recent edition.

C. ASTM D-226, Specification for Asphalt Saturated Organic Felt, most recent edition.

D. ASTM D-312, Specification for Asphalt, most recent edition.

E. ASTM D-1327, Specification for Bitumen Saturated Woven Burlap Fabrics, most recent edition.

F. ASTM D-2178, Specification for Asphalt Glass Felt, most recent edition.

G. ASTM D-2822, Specification for Asphalt Roof Cement, most recent edition.

H. ASTM D-2824, Specification for Aluminum - Pigmented Asphalt Roof Coatings, most recent edition.

I. ASTM D-5147, Specification for Modified Bitumen Roof Membranes, most recent edition.

J. FM - Roof Assembly Classifications.

K. UL - Fire Hazard Classifications.

1.04 SYSTEM DESCRIPTION

A. U.L. Class A Fire-Rated System.

1.05 SUBMITTALS

A. As provided in Section 01300 and as required by the consultant.

B. Product Data: For each type of roofing product specified. Include data substantiating that materials comply with requirements.

C. Shop Drawings: Include plans, sections, details, and attachments to other work, for the following:

1. Base flashings, cants, and membrane terminations.

D. Samples for Verification: Of the following products.

1. 12-inch by-12-inch square of modified bituminous, smooth-surfaced cap sheets.

E. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system and is eligible to receive the standard roofing manufacturer's warranty.

F. Manufacturer Certificates: Signed by roofing system manufacturer certifying that the roofing system complies with warranty requirements.

G. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and the City of Houston's, and other information specified.

H. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of components of roofing system with requirements based on comprehensive testing of current product compositions.

1. Indicate compliance of bulk roofing asphalt materials delivered to Project with requirements. Include quantity and statistical and descriptive data for each product. Submit certificate with each load before it is used.

2. Include continuous log showing time and temperature for each load of bulk bitumen, indicating date obtained from manufacturer, where held, and how transported before final heating and application on roof.

I. Research/Evaluation Reports: Evidence of roofing system's compliance with building code in effect for Project from a model code organization acceptable to authorities having jurisdiction.

J. Warranty: Sample copy of standard roofing manufacturer's warranty stating obligations, remedies, limitations, and exclusions of warranty.

K. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roof installation.

1.06 QUALITY ASSURANCE

A. As provided Section 01400.

B. Qualifications of Manufacturer

1. Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacturing of similar items and with a history of successful production and product installations.

C. Qualifications of Contractor

1. The Contractor shall be previously and currently approved by the manufacturer of the products to be installed under this section of the specification. Verification of approved Contractor status shall be by written manufacturer certification, as stated elsewhere. Contractor shall be certified by the manufacturer as having their highest approval status such as "Master Select" or other designation indicating the highest level of approved contractor.

D. Qualifications of Installers

1. Installers shall be thoroughly trained and experienced in the necessary crafts. Installers shall be made familiar with any unique requirements specified for proper performance of the work in this section. Contractor shall be certified by the manufacturer as having their highest approval status such as "Master Select" or other designation indicating the highest level of approved contractor.

E. Rejection

1. In the acceptance or rejection of work under this section, no allowance will be made for lack of skill or specification understanding on the part of the workmen. It shall be incumbent upon the contractor to use adequate numbers of skilled installers and to instruct them in the requirements of the project specifications as well as maintaining a set of the project specifications and drawings on the roof at all times.

F. Replacement

1. In the event inadequate or improper installation is determined, contractor shall make all repairs and replacements required to render the installation compliant with the project specifications. Replacements, due to improper performance, shall be at the sole cost of the contractor.

1.07 REGULATORY REQUIREMENTS

A. As provided in the General Conditions.

B. This Section, Article 1.04.

1.08 PRECONSTRUCTION CONFERENCE

A. As provided in Section 01200.

1.09 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Material shall be delivered in the manufacturers original sealed and labeled containers or wrappings and in sufficient quantities to provide for continuous installation progress without disruption or delay due to lack of materials on site.

B. Storage: Materials shall be stored out of direct exposure to the elements and shall be stored on pallets or other storage supports, a minimum of 6 inches above the roof or ground surface. All materials shall be covered with canvas tarps or fitted synthetic tarp like covers.

1. If materials are to be stored on the roof, they shall be sufficiently distributed around the perimeter or over load bearing supports to prevent over stressing of the roof deck.

2. Polyethylene roll stock material is not an acceptable tarp material.

3. Prior to leaving the job site, daily, tarps are to be secured at all edges to immovable objects and anchored sufficiently to prevent blow off or dislocation.

C. Handling: Material shall be handled in such a manner as to preclude damage or contamination with moisture or foreign matter.

D. In the event of damage from delivery, storage, or handling of materials under this section, immediately replace deficient materials. Any installation of damaged materials shall be immediately removed and replaced. Replacement of damaged or improperly installed materials shall be at the sole cost of the contractor.

E. Coordinate delivery with the City of Houston.

F. Prevent wrappers and packaging materials from inclusion in the roofing system.

G. Bitumen

1. Mixing of different types or classes of bitumen remains and residues in tankers, kettles, luggers, and buckets will not be acceptable.

2. Tanker and kettle temperatures shall be equipped with accurate and calibrated thermometers.

3. Bitumen shall be heated and applied in accord with E.V.T. ranges recommended by the manufacturer.

4. Bitumen heated beyond its specified flash point will be rejected.

5. Contaminated bituminous material shall not be incorporated into the Work.

6. Once ignited and extinguished in a vessel, bitumen and remains in that vessel shall not be incorporated in the Work.

H. Material containers, mixing, and dilution:

1. Containers shall be closed and sealed except when materials are being removed.

2. Follow Manufacturers' instructions for mixing and stirring.

3. Cements, adhesives, primers, coatings, and sealants which have been diluted or cut-back, after their manufacture shall not be incorporated into the Work.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Work shall not commence during inclement weather.

B. Work shall not commence on a day when precipitation is imminent or probable.

C. Work shall not proceed over damp substrates.

D. Cold weather application procedures shall be employed when sustained ambient temperature is less than 40 degrees Fahrenheit:

1. Insulate bitumen recirculating pipe from kettle to roof.

2. Insulate roofing bitumen transporting devices.

3. Application temperatures, E.V.T., in accord with manufacturer's specification shall be maintained for work to proceed.

4. Plans for area enclosures shall be submitted in advance for approval by the Consultant.

1.11 SEQUENCING AND SCHEDULING

A. Coordinate and schedule all phases of the Work of the Contract Documents with the City of Houston, Subcontractors, Material Suppliers and other parties as necessary to ensure the smooth and orderly transition of separate phases, or portions, of the Work, the timely placement of components and materials, including the complete cooperation between parties and proper execution of the Work.

B. Work shall not be performed outside of normal business hours without the prior approval of the City of Houston.

C. Work is to be performed on a daily basis, with each section completed before progressing to the next days work.

D. Completion of work shall be defined as all specified existing roof preparation and the complete installation of all insulation, field membrane, flashings, counterflashings, sheet metal work, sheet metal fasteners and caulking.

E. Contractor shall complete roofing work on a daily basis unless specifically directed otherwise by the City of Houston.

F. In no case shall the contractor remove more existing roofing than can be completely installed within one (1) hour of the end of the working day.

G. Removal of the existing roof and installation of the new roofing is to be sequenced so as to minimize foot and vehicle traffic over new roofing.

H. All temporary night seals between existing roof membrane and new roof membrane are to be installed in a completely watertight condition a minimum of one (1) hour prior to the end of the work day.

I. Temporary base flashings are not acceptable.

1.12 GUARANTEE AND WARRANTIES

A. The Contractor shall provide the City of Houston with the roof membrane system manufacturers 20 year NDL guarantee against defects in materials and workmanship. A specimen of this guarantee shall be presented to the City of Houston at Contract execution. The completed and approved guarantee agreement shall be delivered to the City of Houston before final payment will be made. The guarantee shall provide for repair and replacement of defective Work and leaks at no cost to the City of Houston.

B. The Contractor shall warrant all Work performed under this Contract for a period of 5 years from the date of Substantial Completion. The Contractor shall accept responsibility for the correction of defects in materials and workmanship and shall repair leaks promptly upon notice by the City of Houston or his Representative and at no cost to the City of Houston. The Contractor shall reimburse the City of Houston for repairs performed by others should the Contractor not remedy leaks within five (5) working days after written notice of said defects by the City of Houston.

C. The Contractor shall provide and install a minimum of two (2) Guarantee/Warranty

signs. Signs shall be a minimum of 8½" x 11" and be constructed of no less than 18 gauge metal. Background color shall be white with black lettering. Signs shall be professionally fabricated and printed by a supplier with experience in such work. Signs shall be mounted at the project site in locations selected by the City of Houston. Signs shall contain the following information:

1. Facility Name and Locations.

2. BEC Project Number.

3. City of Houston named as the owner.

4. Date of substantial completion.

5. Roofing Contractor's information:

   a. Company name.
   b. Company address.
   c. Company contact person.
   d. Company telephone number.
   e. Contractor's Warranty expiration date.
   f. Contractor's Warranty identification number.

6. Manufacturer's Warranty information:

   a. Manufacturers name.
   b. Manufacturers address.
   c. Manufacturers contact person/department.
   d. Manufacturers telephone number.
   e. Manufacturers Warranty expiration date.
   f. Manufacturers Warranty identification number.

7. The following general information shall be posted on the sign:

   "The roof system of this facility is under warranty and access is restricted except with the written permission of the facility manager. Work on or changes to the roof shall not be performed unless the prior written notification has been provided to the contractor and manufacturer(s) as identified herein."

D. The contractor and manufacturer shall perform a twelve (12) month inspection after the substantial completion. The inspections shall be scheduled with the City of Houston and their representative. All deficiencies found during the inspection shall be repaired by the manufacturer and contractor at no expense to the City of Houston.

PART 2 - MATERIALS

2.01 GENERAL

A. Minimum product requirements have been listed. All of these components must be used and bid.

2.02 ROOFING FELTS

A. Fiberglass roofing (ply) felts shall meet or exceed ASTM D-2178, Type IV as follows:

1. PRS Glass Ply 4 by Performance Roof Systems.

2. GAF Glas Ply 4 by GAF Corporation.

2.03 BASE FLASHINGS AND STRIPPING MEMEBRANE

A. Base flashings and stripping membrane shall consist of two bottom (backer) plies of Type IV fiberglass roofing felt and one top ply of white surfaced polyester and fiberglass mat reinforced modified bitumen membrane as follows:

1. DerbiBrite by Performance Roof Systems.

2. Top Ply: Energy Cap Mop FR, as manufactured by GAF Materials Corporation.

B. Stripping membrane shall consist of two-plies of Type IV Fiberglass Roofing Felt.

2.04 ELASTOMERIC SURFACED CAP SHEET

A. Top Ply: DerbiBrite, as manufactured by Performance Roof Systems, Inc., high tensile cap sheet with the following properties.

1. Thickness: Minimum 140 mils.

2. Tensile Strength - Weakest Direction: Minimum 180 pounds per inch of width, at 0 degrees F., as tested by ASTM D5147.

3. Tear Resistance - Weakest Direction: Minimum 174 pounds, as tested by ASTM D5147.

4. Reinforcements: Multiple reinforcements, comprised of one (1) Fiberglass mat with

a minimum weight of 2.65 lb./sq., and one (1) Polyester scrim with a minimum weight of .91 lb./sq.

5. Dimensional Stability: Absolute dimensional change shall be 0%, after heat conditioning at 80 degrees C., per ASTM D5147.

6. Surfacing: Factory applied baked acrylic.

7. pH Rating: Neutral for water run-off.

8. Solar Reflectance Rating: Minimum .91

9. Initial Reflectivity: Minimum 75%.

10. Emissivity: Minimum emissivity .82.

B. Top Ply: Energy Cap SBS 30 FR, as manufactured by GAF Materials Corporation, high tensile cap sheet with the following properties.

Deleted: Heat-Weld Plus

1. Thickness: Minimum 140 mils.

2. Tensile Strength - Weakest Direction: Minimum 70 pounds per inch of width, at 0 degrees F., as tested by ASTM D5147.

3. Tear Resistance - Weakest Direction: Minimum 35 pounds, as tested by ASTM D5147.

4. Reinforcements: Reinforcement comprised of one (1) Fiberglass mat.

5. Dimensional Stability: Absolute dimensional change shall be .5%, after heat conditioning at 80 degrees C., per ASTM D5147.

6. Surfacing: Factory applied TopCoat Energy Coat.

7. pH Rating: Neutral for water run-off.

8. Solar Reflectance Rating: Minimum 80%

9. Initial Reflectivity: Minimum 80%.

10. Emissivity: Minimum emissivity .84.

2.05 RELATED BITUMINOUS MATERIALS

A. Asphalt for Roofing:

1. Type IV, special steep; ASTM D-312-89, Type IV.
2. Manufacturer: Trumbull.

B. Primer:

1. Concrete Primer by Johns Manville.
2. Matrix 301 Asphalt Primer by GAF Materials Corporation.
3. Permatop Primer by Performance Roof Systems, Inc.
4. ASTM D-41-94.

C. Asphalt Roof Cement:

1. 203 Plastic Roof Cement by GAF.
2. Approved equal by Performance Roof Systems, Inc.
3. ASTM D-4586-93, Type I; asbestos free.

D. Flashing Cement:

1. Permastic by Performance Roof Systems, Inc.
2. 201 Premium Flashing Cement by GAF.
3. ASTM D-4586.

E. Cold Application Adhesive (Cap Sheet):

1. Permastic by Performance Roof Systems, Inc.
2. 102 SBS Membrane Adhesive by GAF.
3. ASTM D-4586.

F. Aluminum Coating:

Deleted: Black Armor Asphalt Primer D-41 by Allied Signal, Inc

Deleted: C. Cold Application Adhesive (Cap Sheet):¶
¶
1. . Permastic by Performance Roof Systems, Inc. or approved equal.¶
¶
2. ASTM D-4586¶

Deleted: D

Deleted: E

Deleted: 202

Deleted: F

Deleted: G

1. Permalume Premium by Performance Roof Systems.
2. Matrix 304 Non-Fibered Aluminum Roof Coating by GAF.
3. ASTM D-2824.

G. Underlayment: Deleted: H

1. 20 mil. (Minimum) Neoprene Sheeting by Nervastral.
2. 20 mil. (Minimum) P.V.C. Sheeting, Lexsuco Water Barrier by GAF.
3. Use adhesives as provided by the manufacturer.

H. Rubberized Asphalt Edge Sealant: Deleted: I

1. TopCoat Flex Seal by GAF or approved equal.
2. ASTM D-4586.

I. Fiberglass reinforcing fabric shall comply with the requirements of ASTM D 1668, Type I. Deleted: J

J. Elastomeric Roof Coating. Deleted: K

1. Permacool Reflective Elastomeric Roof Coating as manufactured by Performance Roof Systems, Inc.
2. TopCoat Energy Cote by GAF.
3. Primers and Miscellaneous products as supplied for the manufacturer for use with the elastomeric coating and required for its installation.

PART 3 - EXECUTION

3.01 GENERAL

A. The latest manufacturer specifications and installation techniques are to be followed.

3.02 PRE-CONSTRUCTION SITE INSPECTION

A. As provided in Section 01312.

B. Examine site and determine satisfactory conditions for Work.

C. Provide in writing to the City of Houston to notify of defects and conditions which may adversely influence performance or completion of Work.

D. Absence of written notice will constitute the Contractors acceptance of site.

E. Verify:

1. Deck support, attachment, and integrity.

2. Deck weight limits before loading materials.

3. Existence and locations of above ground utility lines, underground utilities, water and gas lines, fire sprinkler systems, pavement heating devices, above and below deck conduit and tubing, ceiling suspension systems and lawn sprinkling systems.

3.03 DAILY INSPECTION

A. Examine the areas and conditions under which work in this section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until such conditions have been corrected.

3.04 SURFACE CONDITIONS

A. Surfaces scheduled to receive roofing are to be free of any moisture, frost, or loose debris.

B. Substrate is to be smooth, free of sharp projections, and free of obvious depressions.

C. All metal fittings specified or shown on drawings are to be in place before roofing.

D. All nailers shall be securely installed prior to roofing.

3.05 HANDLING, HEATING AND APPLICATION TEMPERATURE OF ASPHALT

A. If pumper kettles only are used on the job, then the asphalts shall be delivered to work site in cartons and/or cans. The kettle shall be placed in a metal pan with a volume 10% larger than the volume of the kettle. The kettle shall be equipped with an “afterburner” to reduce fumes from the heated asphalt. A Fire Marshall shall be present at all times during kettle operations and all costs for the Fire Marshall shall be paid by the contractor.

B. If tankers are used, the asphalt in the tanker shall not be heated to above 475 degrees maximum, and 350 degrees maximum if asphalt is to be stored more than 8 hours.

C. The heating of asphalts should conform to the equiviscous temperature range concept (EVT).

D. Never heat the asphalt to or above the actual coc flash point, (FPT).

E. Asphalt shall be heated in an approved kettle equipped with a secondary burner for reducing particulate and hydrocarbon emissions**.**

F. The manufacturer must label each carton of asphalt with the EVT and FPT temperatures.

G. All asphalt delivered to the site shall be tested according to ASTM D-312 requirements by an independent testing laboratory.

H. The application or embedment temperatures of asphalts shall be within 25°F of the equiviscous temperature (EVT) for optimum application.

3.06 FELT INSTALLATION

A. Over insulation, apply 3 plies of roofing felt set in hot (at EVT) asphalt as specified.

B. Start with a 12 inch wide felt; then over that, 24 inch wide; then over that, a full 36 inch wide felt.

C. Install each felt so that it shall be firmly and uniformly set, without voids, into the hot (at EVT) asphalt applied just before the felt at a nominal uniform rate of 25 lbs per 100 square feet.

D. Felts are to be broomed into the hot asphalt with a soft bristle push broom or a smooth rounded wood squeegee with no bristles.

E. Do not walk directly on felts for a minimum of 45 minutes to allow for proper adhesion of the felts.

F. No phased construction is to be allowed. The roof section is to be completed with a full three-ply application at the end of each working day. If it should become necessary to employ a phased application due to a sudden rainstorm, the temporary installed felts will be removed prior to a full three-ply application.

3.07 CAP SHEET INSTALLATION

A. Install 15 ft. lengths of modified bitumen cap sheet using cold process adhesive

application methods as specified by the manufacturer.

B. Where allowed by the manufacturer heat weld the cap sheet to the 3-ply, including all sidelaps and endlaps in lieu of cold process adhesive. Heat welding shall be done in accordance with the manufacturers latest written instructions. While installing membrane top ply, provide proper protection or method during application and heat welding of side and endlaps to prevent burning or charring on the surfacing of previously installed sheet.

C. Fully adhere membrane top ply to glass ply felts and have a minimum of 3-inch side laps or width of selvage edge and 6-inch end laps. Extend membrane top ply to top edge of cant. Apply each sheet directly behind technician. Stagger side laps of top ply (a minimum of 12-inches) from side laps of base ply.

D. During end lap application, trim the inside corner along the selvage edge of the underlying sheet at the end of the roll. The trimmed area shall be the width of the selvage edge and extend downward from the end of the roll to the outer side of the roll on a linear direction approximately 5-1/2-inches from end of roll. Trim outside corner of membrane top ply at end laps to provide rounded finished corner.

E. Install membrane top ply so that end laps of every other sheet is aligned.

F. Apply a patch over areas of membrane with spills, scars, physical damage or other defects. Patch shall be the full width of membrane top ply and extend a minimum of 2-inches beyond the defect in each direction.

G. Check heat welded lap seams and seal unbonded or discontinuous seams using a heated steel trowel.

H. Apply manufacturers approved elastomeric coating to all cap sheet laps, areas of discolorization, burn marks, etc., in accordance with the manufacturer's instructions and as directed by the City of Houston or consultant. No bitumen marks, dirty areas, etc. will be acceptable on the white cap sheet. If directed by the City of Houston and/or the consultant the contractor shall clean and/or coat entire areas with manufacturers approved elastomeric coating system to the satisfaction of the City of Houston.

3.08 BASE FLASHINGS

A. Install finishing felts extending to 2" above the top of the cant strip and trimmed level.

B. Prime all vertical surfaces with asphalt primer at a nominal rate of 1 gallon per 100 sq. ft. and allow to dry.

C. In a uniform coating of hot asphalt, install two (2) plies of glass fiber backer felt extending from the top of the base flashing to 4 inches from the base of the cant onto the roof membrane.

D. Apply top ply of flashings only after ply felts are in place.

E. Cut modified bitumen flashing membrane to extend a minimum of 4-inches above the top of the membrane top ply covering the cant. The overall minimum height of the top of the flashing membrane above the top of the roof surface is 8-inches. Extend flashings to full height of vertical substrate.

F. Extend the flashing membrane horizontally 4-inches onto the field of the roof surface beyond the bottom edge of the cant strip.

G. Cut flashing from roll and create an uncoated edge as lap seam for adjacent sheets. Lap ends a minimum of 4-inches and stagger laps from laps of underlying plies.

H. Fully adhere and conform top ply of flashing to substrate.

I. Secure the upper edge of the base flashing with a termination bar secured at 6 inches on center maximum.

J. Side and end lap treatment:

1. Where allowed by the manufacturer heat-weld all sidelaps in lieu of cold process adhesive.

2. All side and end laps shall be rolled with a minimum 20 lb. Steel roller following immediately behind the torch and/or heat welder.

3. A minimum of 1/4" continuous bleed-out shall be visible at all laps/seams after application. The edge of the laps/seams shall be left untooled (not buttered).

4. Apply manufacturers supplied elastomeric coating to all sidelaps and endlaps, areas of discolorization, burn marks, etc., in accordance with the manufacturer's instructions, or as directed by the consultant.

K. Top edge of the flashing felts are to be sealed in a solid coating of flashing cement and 4" reinforcing fabric and top layer of asphalt flashing cement.

L. Elevation on walls and vertical details:

1. Minimum 8 inches above finished roof surface.

2. Elevations above 24 inches:

    a. Flashing membranes shall be installed the width of the roll and precut to the desired height.

M. Terminations:

1. Walls where coping scheduled:

    a. Extend to top edge of nailer.
    b. Fasten with angle termination bar along top outside edge of nailer, 6 inches on center.
    c. Extend underlayment across nailer down outside vertical face of nailer.
    d. Fasten along outside nailer face, 6 inches on center.

2. Surfaces where termination or compression bar scheduled:

    a. Extend up to and along scheduled detail fixation line.
    b. Install compression bar on same day as flashing installation.

3. Surfaces where counterflashing scheduled:

    a. Extend up to 1/4 inch below receiver.
    b. Fasten membrane in a line 1 inch below termination edge and on 6 inch centers.
    c. Three-course upper termination by applying an 1/8 inch layer of roof cement over transition and fully embed a 6 inch wide strip of fabric into the wet cement layer. Apply an additional 1/8 inch thick layer of roof cement over the embedded fabric

4. Curbed box penetrations:

    a. Extend to top outside edge of nailer.
    b. Fasten in line 1 inch below termination edge and on 6 inch centers.

5. Surface where metal edge scheduled:

    a. Extend to outside edge of nailer.
    b. Install edge sealant with white elastomeric coating as provided by the manufacturer.

N. Apply manufacturers approved elastomeric coating to all cap sheet laps, areas of

discolorization, burn marks, etc., in accordance with the manufacturer's instructions, or as directed by the consultant. No bitumen marks, dirty areas, etc. will be acceptable on the white cap sheet/base flashing. If directed by the City of Houston and/or the consultant the contractor shall clean and/or coat entire areas with manufacturers approved elastomeric coating system to the satisfaction of the City of Houston.

3.09 STRIPPING AT METAL FLASHING FLANGES

A. Install metal flashing flanges embedded in roofing cement.

B. Flanges are to extend a minimum of 4" onto the roof surface. Mechanically attach to wood nailers or deck on 3" centers staggered.

C. Prime top of metal flanges and allow to dry, then install 2 plies of fiberglass felt in hot asphalt. Bottom ply to extend a minimum of 4" past the edge of the metal flange. Top ply to extend a minimum of 6" past the edge of the metal flange.

D. Caulk edges with edge sealant and embed loose granules on granule surfaced cap sheets.

E. Contractor shall provide the minimum duration of fire watch as required by Code Requirements, and or a minimum of 4 hours, which ever is more stringent.

3.10 CLEAN UP

A. The contractor shall clear the construction areas and shall provide for the removal from the building site of all his construction debris.

B. All debris shall be removed from the premises promptly and the construction area left clean daily.

C. The contractor is responsible to assure that his subcontractors have properly removed and disposed of all debris relating to their Contract.

D. At the completion of the Contract, contractor is to remove and dispose of all equipment related to his Contract.

3.11 MANUFACTURER'S FIELD SERVICES

A. Provide manufacturer's field services including attendance of the Pre-Construction meeting, initial inspection, mid-term inspection and final inspection. Additional inspections shall be made as required by the manufacturer or as requested by the City of Houston or consultant.

B. Request progress inspections by manufacturer's representative where required under guarantee provisions. A minimum of a midterm and final inspection of completed work are required by the manufacturer at a minimum.

END OF SECTION